CONTENTS

Section 1 — Neurobiology

Chairpersons: J. ARENDT (Surrey, U.K.)
C. ENGLUND (San Diego, California)

Circadian rhythm in serotonin release from hippocampal neurones of the rat: role of terminal autoreceptors 1
P. H. REDFERN and A. SINGH

Light responsiveness of a circadian oscillator during lithium and potassium treatment 5
H. KLEMFUSS and D. F. KRIPKE

The effects of chronic lithium treatment on rat activity rhythms and levels under constant and entrained conditions 9
D. L. McEACHRON and N. T. ADLER

Effects of the thiazolidinedione derivative CGP 19984 on circadian variations of urinary excretion of pineal and adrenal hormones in male rats 13
A. HÄUSLER and J. ARENDT

Day–night differences in pineal type II thyroxine 5′-deiodinase and *N*-acetyltransferase activities during development in the rat 17
A. RUBIO, J. M. GUERRERO, M. A. GONZALEZ and C. OSUNA

Nyctohemeral profile of type II thyroxine 5′-deiodinase activity in the pineal and harderian glands of the swiss mouse 21
C. OSUNA, A. RUBIO, J. JIMENEZ, R. J. REITER and J. M. GUERRERO

Norepinephrine stimulation of rat pineal type II thyroxine 5′-deiodinase 25
J. M. GUERRERO, C. SANTANA and R. J. REITER

Bright light in the morning but not in the evening effects circadian rhythms in plasma cAMP, melatonin and cortisol in healthy subjects 29
T. BRÜHL, B. PFLUG, W. KÖHLER, Y. TOUITOU and B. LEMMER

Bright light amelioration of shift work 33
C. ENGLUND, R. LOVING and D. KRIPKE

Effects of bright illuminance on body temperature and human performance 37
J. FRENCH, P. HANNON and G. C. BRAINARD

Temazepam and performance following a sleep cycle shift 41
J. FRENCH, P. BOLL, W. F. STORM and P. DOWD

Persistance of a circadian rhythm in axillary temperature (AT) of adult epileptic patients 45
M. F. MONGE-STRAUSS, A. BICAKOVA-ROCHER, F. MIKOL, L. GARBARG-CHENON, A. REINBERG and Y. TOUITOU

Administration-time dependent effects of triazolam on cognitive performance 49
P. GILLOOLY, M. H. SMOLENSKY, C. WHITE, R. FORTHOFER and B. HSI

Hormonal effects of sleep deprivation in depressed patients 53
P. SCHULZ, R. KNABE, B. DEGEILH and M. HUGENTOBLER

Effect of rubidiumchloride on the circadian system in affective disorders 57
B. PFLUG, W. KÖHLER, A. B. CARELLA, K. P. SCHMIDT and L. DEMISCH

Section 2 — Endocrinology and Gastroenterology

Chairpersons: Y. TOUITOU (Paris, France)
E. HAUS (St Paul, Minnesota)

Circadian variation in response of salivary testosterone concentration to treatment with human chorionic gonadotrophin at different circadian stages in boys with cryptorchid testes 61
G. Y. NICOLAU, E. HAUS, L. PLINGA, L. DUMITRIU, L. SACKETT-LUNDEEN, D. J. LAKATUA, E. UNGUREANU, E. PETRESCU and F. ENACHE

The effect of corticosterone on the pigeon cropsac response to prolactin 65
J. T. BURNS and R. W. THIELE

Effects of a serotoninergic agent, *d*-Fenfluramine, on the circadian rhythm of prolactin, ACTH and cortisol 69
E. FERRARI, V. INGLESE, F. MAGRI, D. DORI and P. A. BOSSOLO

Changes of the circadian pattern of plasma melatonin related to aging 73
E. FERRARI, S. B. SOLERTE, D. DORI, F. MAGRI, M. FIORAVANTI and P. A. BOSSOLO

Relationships between endocrinological patterns and nutritional rhythms during the menstrual cycle in disturbed and nondisturbed eaters 75
E. DAUME, P. NETTER, I. OSADA-MÖLLERS, U. LASCHEFSKY, P. HOFFMANN and G. STURM

Sensitivity to benomyl: the body temperature rhythm and uterine metabolism during decidualized pseudopregnancy 79
F. SPENCER, E. DUNBAR, M. A. SINGLETON and B. P. HSI

Evaluation of individual and temporal patterns in gastric pH response to ranitidine given as multiple boluses or constant-rate IV infusions over 24 hours 83
C. A. WHITE, M. H. SMOLENSKY, J. MOORE and S. SANDERS

Circadian variation of the effect of aspirin on gastric potential difference 87
A. PFEIFFER, F. SCHUNBECK, T. SCHMIDT and H. KAESS

Differential effect of single diet and food selection on temporal patterns of food intake and arterial and venous glucose, insulin and tryptophan levels in rats 91
L. THIBAULT

^{125}I-insulin binding in liver and the influence of insulin on blood glucose in calorically restricted B6C3F1 male mice 95
R. J. FEUERS, J. D. HUNTER, P. H. DUFFY, J. E. A. LEAKEY, R. W. HART and L. E. SCHEVING

Circadian variations of radioinsulin-receptor binding in caloric restricted mice and relationships to chronotherapy of human insulin dependent diabetes 99
J. D. HUNTER, R. J. FEUERS, T. TSAI, K. GRONERT and L. E. SCHEVING

Circadian rhythm of the level of insulin, glucagon, growth hormone and pancreatic polypeptide in the blood of insulin dependent diabetic children 103
D. KIEŁCZEWSKA-MROZIKIEWICZ

Section 3 — Cardiovascular Agents

Chairpersons: B. LEMMER (Frankfurt, F.R.G.)
J. CAMBAR (Bordeaux, France)

Renal haemodynamics circadian rhythm in unanesthetized unrestrained dopamine infused rats 107
J. TRANCHOT, B. L'AZOU, P. REDON and J. CAMBAR

Circamensual changes in renal haemodynamics and tubular functions in unanesthetized dog 111
B. L'AZOU, P. REDON, J. F. PINON and J. CAMBAR

Comparative study in plasma atrial natriuretic factor (ANF) circadian variations in normotensive and hypertensive rat 115
M. LAVAL, P. REDON and J. CAMBAR

The method of maximum entropy (MME) spectral analysis in the examination of rhythmic effects by platelet activating factor (PAF) on arterial blood pressure in anaesthetized rats 119
E. MALHERBE, E. ETIEMBLE, C. ARGILLIER, P. BRAQUET and R. PIERRE

Chronopharmacokinetics and haemodynamic effects of oral nifedipine in healthy subjects and in hypertensive patients 121
B. LEMMER, G. NOLD, S. BEHNE, H. J. BECKER, J. LIEFHOLD and R. KAISER

Chronobiologic difference in the efficacy of antihypertensive agents to essential "hypertension" 125
K. TAMURA, S. MUKAIYAMA, H. IJIRI and T. KOMAYA

Chronobiologic evaluation of the efficacy of captopril in essential "hypertension" 129
H. IJIRI, S. MUKAIYAMA, I. TSURUTA, T. KOMAYA, H. ISHII, T. SAWANOBORI, K. IWASAKI, Y. SAITO and K. TUMURA

Chronobiologic evaluation of the efficacy of metoprolol to essential "hypertension" 133
T. KOMAYA, S. MUKAIYAMA and K. TUMURA

Circadian variation of new cardiac hormones that lower blood pressure and increase sodium excretion 137
D. L. VESELY, E. K. KANABROCKI, R. B. SOTHERN, L. E. SCHEVING, T. H. TSAI, J. GRECO, D. L. BUSHNELL, E. KAPLAN, J. RUMBYRT, R. P. STURTEVANT, F. M. STURTEVANT, W. F. BREMNER, J. L. H. C. THIRD, W. J. HRUSHESKY and J. H. OLWIN

Correlation between blood pressure characteristics and neonatal family history of high blood pressure 141
J. M. FRAGA, R. C. HERMIDA, J. R. FERNÁNDEZ, A. REY, D. E. AYALA, J. RODRÍGUEZ and M. IGLESIAS

Linear model for prediction of a neonatal cardiovascular risk score 145
R. C. HERMIDA, J. M. FRAGA, A. REY, D. E. AYALA, J. R. FERNÁNDEZ, J. RODRÍGUEZ and M. IGLESIAS

Section 4 — Metabolic Aspects

Chairpersons: H. DECOUSUS (St Etienne, France)
G. LABRECQUE (Québec, Canada)

Temporal variations in hepatic cytochrome P-450 isozymes in rats 149
Y. MIYAZAKI, S. IMAOKA, M. YATAGAI, Y. MOTOHASHI, Y. KOBAYASHI and Y. FUNAE

Circadian variations in platelet functions and blood coagulation parameters 153
E. HAUS, M. CUSULOS, L. SACKETT-LUNDEEN and J. SWOYER

Can plasma levels of *S*- and *R*-warfarin be correlated with the drug-induced accumlation of vitamin K epoxide in rat liver microsomes? 157
G. SOULBAN, P. M. BÉLANGER and G. LABRECQUE

Temporal variations in the plasma concentrations of *S*- and *R*-warfarin enantiomers in the rat 161
G. SOULBAN, P. M. BÉLANGER and G. LABRECQUE

Morning hypercoagulability in man 165
Ph. CONCHONNET, H. DECOUSUS, C. BOISSIER, B. PERPOINT, J. RAYNAUD, P. MISMETTI, B. TARDY and P. QUENEAU

Intrapulmonary administration of heparin in the morning and its effect upon blood variables 169
E. L. KANABROCKI, R. B. SOTHERN, J. H. OLWIN, W. F. BREMNER, D. L. BUSHNELL, M. RYAN, M. E. RUBNITZ, N. FABBRINI, S. LAMPO, C. COURNOYER, J. L. H. C. THIRD, H. MERMALL, H. FERLIN, A. VAHED, D. L. VESELY, L. SACKETT-LUNDEEN and E. HAUS

Circadian timing of recombinant human erythropoietin (rhEPO) in the mouse affects hematopoietic response 173
P. A. WOOD, S. SÁNCHEZ DE LA PEÑA and W. J. M. HRUSHESKY

Temporal variation in acute neurotoxicity of trichloroethylene in the rat 177
Y. MOTOHASHI and Y. MIYAZAKI

A histochemical demonstration by digital imaging microscopy of the value of the circadian rhythm of alkaline phosphatase activity in renal chronotoxicology 181
J.-C. CAL, J. LESTAGE and J. CAMBAR

Age-dependency in the 24-hour-rhythms of basal and forskolin-stimulated adenylate cyclase activity in the rat heart 185
B. LEMMER and C. WALD

Effects of caffeine on circaseptan rhythmicity following surgery in laboratory rats 189
L. FARR, C. TODERO and L. BOEN

Sex related differences in adaptation to chronic caloric restriction in old $B_6C_3F_1$ mice: implications for chronopharmacology and chronotherapy 193
P. H. DUFFY, R. J., FEUERS, J. E. A. LEAKEY and R. W. HART

Infradian and circadian variation in urine volume and analytes of a comatose post CVA woman receiving continuous nourishment over 11 months 197
R. B. SOTHERN, E. L. KANABROCKI, D. L. BUSHNELL, T. H. TSAI, L. E. SCHEVING and J. H. OLWIN

Section 5 — Immunology and Cancer

Chairpersons: I. E. ASHKENAZI (Tel Aviv, Israel)
F. LÉVI (Paris, France)

Circadian rhythm of interleukin I (IL-1) in serum of healthy men 201
P. BOURIN, F. LÉVI, I. MANSOUR, C. DOINEL and M. JOUSSEMET

Circadian variations of hemoregulatory peptide effect on PMN migration in mice 205
J. P. BUREAU, L. GARRELLY, P. VAGO, S. BAYLE, G. LABRECQUE and O. D. LAERUM

Circadian rhythms of surface epitope numbers (CD3 and CD4) from circulating lymphocytes of healthy male human subjects 209
C. CANON, F. LÉVI, M. MECHKOURI, G. DEBOTTE and A. REINBERG

Circadian stage dependent response to interleukin-2 in mouse spleen and bone marrow 211
R. VON ROEMELING, L. DE MARIA, M. SALZER, M. CONNERTY, P. WOOD, E. PORTUESE, S. SÁNCHEZ DE LA PEÑA, R. C. DE CONTI, G. CHIKKAPPA, D. PASQUALE, T. FERRO and W. HRUSHESKY

How to accurately evaluate growth fraction potential doubling time and cell loss in animal and human tumor systems with circadian kinetics 215
C. FOCAN

Circadian tolerance to etoposide and cisplatin as first line treatment for advanced lung carcinoma 219
C. FOCAN, B. BASTENS, P. DRIESSCHAERT, P. MENDES, F. LÉVI, J. L. PUJOL and A. THYSS

Circadian rhythms in expression of cell surface antigens of murine spleen cells 223
R. LANGE, H. RATJCZAK, P. THOMAS, K. HAGEN, J. WU and F. HALBERG

The role of dihydropyrimidine dehydrogenase (DPD) and pyrimidine phosphorylase (dThdPase) in the circadian variation of plasma drug levels of 5-fluorouracil (FUra) and 5-fluorodeoxyuridine (FdUrd) following infusion of FUra or FdUrd 227
G. C. DAHER, B. E. HARRIS, R.-W. ZHANG, E. M. WILLARD, S.-J. SONG and R. B. DIASIO

Circadian time-dependent tissue uptake of cisplatin (CDDP) and carboplatin (CBDCA) following repeated administrations: relationship with drug toxicities in mice 231
A. N. BOUGHATTAS, C. FOURNIER, B. HECQUET, G. LEMAIGRE, A. ROULON, A. REINBERG, G. MATHÉ and F. LÉVI

A chronopharmacologic strategy for the development of the new anticancer agent oxalatoplatinum (1-OHP): towards its conditioning into cheap, disposable and programmable-in-time micropumps 235
F. LÉVI, J. P. CAUSSANEL, A. N. BOUGHATTAS, S. BRIENZA, B. HECQUET, F. NEFTEL, J. GASTIABURU, A. REINBERG, G. MATHÉ and J. L. MISSET

Glutathione in human bone marrow and its circadian stage relation to DNA synthesis 237
R. SMAALAND, A. M. SVARDAL, K. LOTE, P. M. UELAND and O. D. LAERUM

Chronotoxicity and phenotypic variability 241
I. E. ASHKENAZI, L. PELEG, Y. COHEN-KITAY and R. CARLEBACH

Abnormal patterns of plasma cortisol in breast cancer patients 245
Y. TOUITOU, F. LÉVI, A. BOGDAN and B. BRUGUEROLLE

Section 6 — General Chronopharmacology

Chairpersons: D. KRIPKE (San Diego, California)
B. BRUGUEROLLE (Marseille, France)

Circadian rhythm of pain in man: study by measure of nociceptive flexion reflex 249
C. BOURDALLE-BADIE, M. ANDRE, P. POURQUIER, S. ROBERT, J. CAMBAR and P. ERNY

Temporal variation in the self-administration of morphine sulfate via patient-controlled analgesia in postoperative gynecologic cancer patients 253
S. E. AUVIL-NOVAK, R. D. NOVAK, M. H. SMOLENSKY, M. M. MORRIS and J. W. KWAN

Circadian phase dependency of cardiac tissue levels of three amide-type local anesthetics 257
M. PRAT and B. BRUGUEROLLE

Temporal variations of brain tissue levels of the local anaesthetics in the mouse 261
M. PRAT and B. BRUGUEROLLE

Chronokinetics of acetaminophen in elderly patients 265
B. BRUGUEROLLE, G. BOUVENOT, R. BARTOLIN and A. POUYET

Circadian rhythm parameters of seventeen hormonal variables in plasma and of urinary catecholamines in elderly subjects treated with cyclobarbital 269
D. LAKATUA, G. NICOLAU, E. HAUS, L. SACKETT-LUNDEEN and E. PETRESCU

D-xylose pharmacokinetics during the menstrual cycle 273
C. FISET and M. LEBEL

Chronopharmacokinetics of gentamicin: comparison between man and mice 277
S. NAKANO, J. SONG and N. OGAWA

Plasma concentrations of methylxanthines under circadian therapy with theophyline 281
T. FRANKEWITSCH, E. HAEN, B. FICHTL, H. P. EMSLANDER and R. HAUCK

Phase-advance of circadian rhythms by environmental cue manipulation 285
C. TODERO, L. FARR, A. KEENE, G. ERICKSON and R. OSBORNE

Section 7 — Chronotherapeutics

Chairpersons: M. H. SMOLENSKY (Houston, Texas)
E. HAEN (Munich, F.R.G.)

Timing optimizes sustained-release ketoprofen treatment of osteoarthritis 289
C. BOISSIER, H. DECOUSUS, B. PERPOINT, M. OLLAGNIER, P. MISMETTI, J. HOCQUART and P. QUENEAU

Tenoxicam chronotherapy of rheumatic diseases 293
A. REINBERG, R. MANFREDI, M. F. KAHN, D. CHAOUAT, Y. CHAOUAT, B. DELCAMBRE, P. LE GOFF, Y. MAUGARS and J. P. VALAT

Chrontherapy of primary open-angle glaucoma 297
F. CUI, G. JIN and S. QIU

The effect of chronotherapy with a 24-hour sustained release theophylline preparation of a.m. and p.m. differences in airway patency and responsiveness 301
H. MILGROM, A. BARNHART, J. GADDY, R. BUSH and W. BUSSE

Diurnal variation in peak flow rate in children with mild asthma. Effects of treatment with budesonide and terbutaline 305
H. J. WAALKENS, J. GERRITSEN, W. M. C. VAN AALDEREN, G. H. KOËTER, F. KROUWELS, M. BOORSMA, R. J. ROORDA and K. KNOL

Adrenergic response in children with and without nocturnal asthma on exogenous stimuli 309
W. M. C. VAN AALDEREN, D. S. POSTMA, G. H. KOËTER, J. G. DE MONCHY, J. GERRITSEN, R. J. ROORDA and K. KNOL

Nocturnal asthma in children; underlying mechanism 313
W. M. C. VAN AALDEREN, D. S. POSTMA, G. H. KOËTER, J. GERRITSEN, R. J. ROORDA and K. KNOL

Day–night pattern of isoproterenol (ISO) use for relief of acute asthma symptoms 317
A. C. BROWN, M. H. SMOLENSKY and G. E. D'ALONZO

Chronotherapeutically optimized theophylline therapy 319
G. E. D'ALONZO, M. H. SMOLENSKY, L. GIANOTTI, M. EMERSON, H. STAUDINGER and V. STEINIJANS

Theophylline therapeutic drug monitoring in the case of a new sustained-release pellet formulation for once daily evening administration 323
V. M. STEINIJANS, H. TRAUTMANN, R. SAUTER and H. STAUDINGER

Preservation of the adrenal function with oral morning dosing of corticoids in long term (3 to 11 years) treated cortico-dependent asthmatics 327
A. REINBERG, Y. TOUITOU, M. BOTBOL and P. GERVAIS

Circadian changes in the size of facial skin corneocytes of healthy women 331
A. REINBERG, C. KOULBANIS, E. SOUDANT, A. NICOLAÏ and M. MECHKOURI

Circadian characteristics of several urinary variables following morning EDTA infusion: a case report 335
E. L. KANABROCKI, R. B. SOUTHERN, D. L. BUSNELL and J. H. OLWIN

Author Index 339

Subject Index 343